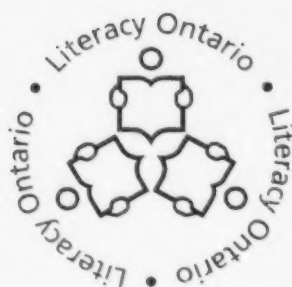


Literacy Ontario



Tools for a New Beginning:

A Strategy for Computer-Based Learning in Literacy

Literacy and Basic Skills Section
Workplace Preparation Branch
Ministry of Training, Colleges and Universities



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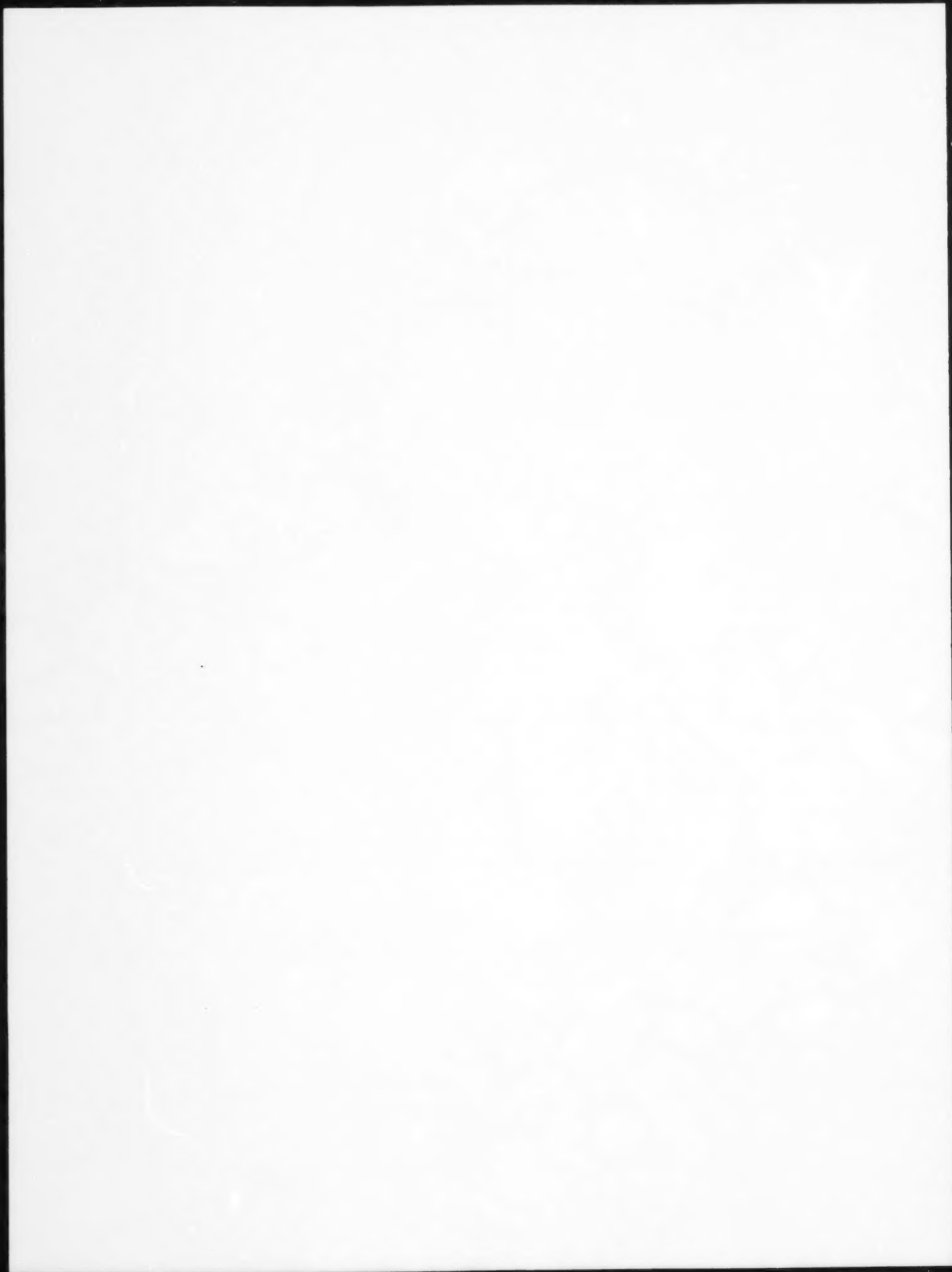
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Executive Summary

Literacy and Basic Skills (LBS) agencies in Ontario equip adults with skills they need to meet their goals to find and keep jobs and for enhanced participation in their communities. Increasingly, LBS agencies are incorporating computers into the learning process, responding to the growing interest of adults in computers as well as the increasing technological requirements of employment.

The LBS Program embeds instruction in basic computer skills within a literacy-learning process. Adults learn to handle the literacy demands of computers as they learn basic computer skills. In turn, other programs and services of the new employment and training system can build upon this base of skills, teaching adults in the specific software packages they will need in the workplace.

Tools for a New Beginning: A Strategy for Computer-Based Learning in Literacy lays out an approach to implementing and supporting a computer-based mode for the delivery of literacy services in Ontario, a mode that complements and enlarges upon existing types of delivery.

The strategy positions LBS delivery agencies funded by the Ministry of Training, Colleges and Universities (MTCU) to effectively use technology in the emerging comprehensive education and training system for adults outlined in the provincial report, *Better Skills, More Jobs: Ontario's Plan for Tomorrow's Job Market*.

The strategy focuses on the role of new technologies in the training of Ontario adults for the jobs of the 21st century. As such, it is in full accord with the strategic directions of the *Road Map to Prosperity* of the Ontario Jobs and Investment Board (OJIB).

Literacy and Basic Skills agencies have more than a decade of experience in using computers. However, there has been no framing vision to guide the use of computers with literacy learners. At the present time, learners are placing growing demands on LBS agencies to provide opportunities for computer-based learning for literacy. Many agencies are responding by integrating new computer hardware and software into their programming. There is a clear need for strategic guidance.

The six elements of the *Tools for a New Beginning* strategy are presented below, followed by the proposed actions under each element.

The six strategic directions, and proposed activities, include:

1. Support expanded participation in computer-based and online learning through the LBS Program:
 - Computer-based learning is recognised as a new mode of delivery of LBS services and LBS administrative and program support will be provided for it.
(1.1)

- Best practices in integrating instruction in literacy skills and basic computer skills will be collected and made available online and in print format by AlphaPlus Centre. (1.2)
 - The development and dissemination of a set of standards for software acquisitions by LBS delivery agencies will be co-ordinated by AlphaPlus Centre. (1.3)
 - Distance learning through the AlphaRoute Web-based learning environment will be integrated as a LBS delivery option beginning September 2000. (1.4)
 - New opportunities for learners to connect with one another through methods such as virtual classroom visits will be co-ordinated by AlphaPlus Centre. (1.5)
 - Projects will be invited to develop online assessment tools and approaches suitable for distance learning applications. (1.6)
2. Support learners to take advantage of the new technologies in their literacy and basic skills learning:
- Projects will be invited for sharing and developing means of assessing for learning needs and interests related to computers. (2.1)
 - Ontario will adopt the goal of one computer for each ten learners in the LBS Program. (2.2)
 - Resources will be made available to LBS delivery agencies for the cost of at least one Internet telephone line dedicated to learning purposes. (2.3)
 - A proposal will be invited for the development of a CD-ROM that will prepare learners at more basic levels to begin using computers, the Internet, and AlphaRoute. (2.4)
 - Curriculum materials in electronic formats for computer-based learning will be developed by AlphaPlus Centre, Ningwakwe Learning Press, and Centre FORA, in co-operation with LBS agencies in the four LBS delivery streams. (2.5)
3. Support literacy agencies and practitioners to use computer-based learning effectively:
- Case studies on best computer-based learning practices will be collected and published electronically, and online discussions on best practices will be organised, by AlphaPlus Centre. (3.1)

- Training in computer-based learning will become an on-going topic for professional development as delivered by regional networks, sectoral bodies, and umbrella organisations—as supported by AlphaPlus Centre. (3.2)
 - Partnerships will be sought with community colleges and other organisations with computer labs that may be used for practitioner training on technology. (3.3)
 - Project proposals will be invited for Web-based professional development courses from sectoral bodies and regional networks in the Anglophone stream and umbrella organisations in the other streams. (3.4)
 - A project proposal will be invited from AlphaPlus Centre to create a practitioner training CD-ROM or DVD on computer-based learning following, for example, the model of Algonquin College's Prior Learning Assessment CD-ROM. (3.5)
 - Partnerships with organisations such as TVOntario will be formed in order to provide video-based training on computer-based learning. (3.6)
 - Key performance indicators will be developed for literacy and technology, and LBS agencies will be supported as they develop technology plans. (3.7)
 - As part of its core activities, AlphaPlus Centre will provide appropriate technology support services in order to enable each LBS delivery agency to consolidate its technological base for computer-based delivery and its connection to the Internet. (3.8)
 - A strategy will be developed to recruit, train, and co-ordinate volunteer tutors with the technical skills required to support practitioners and learners in computer-based learning, including distance delivery through AlphaRoute. Community Literacy Ontario and Laubach Literacy Ontario will develop the strategy, in co-operation with the private sector. (3.9)
4. Provide LBS services to more Ontario adults, in new and effective ways, through computer-based learning:
- A Deaf Technology Team will be set up in order to focus on the ways in which technology may help Deaf learners to meet their LBS goals. (4.1)
 - Project proposals will be invited from LBS agencies with expertise in the area for demonstration projects for adaptive and assistive devices to enhance literacy learning. (4.2)
 - Alternative Internet connections for remote regions of Ontario will be investigated by AlphaPlus Centre. (4.3)

- Innovative means of adapting computer-based learning to better meet the needs of Ontario Works participants will be developed. (4.4)
5. Involve learners in a new culture of connectivity within the adult literacy field:
- The Web-based information and communication capacities of MTCU's LBS Section will be enhanced as an example for the field. (5.1)
 - Literacy organisations will research the need for, and develop models of, training and support for learners to be full participants in the online literacy community in Ontario. (5.2)
6. Promote partnering of LBS delivery agencies with government, non-profit agencies, and the private sector to extend the technology leadership role of the adult literacy field in Ontario:
- Two regional Partnerships for Technology and Literacy meetings (one in northern Ontario and one in southern Ontario) will be held to encourage innovative collaborations among organisations of all types. (6.1)
 - Private sector partnerships will be considered for all key technology initiatives. (6.2)
 - Ontario will play a vital provincial role in the Canadian electronic literacy infrastructure through means such as sharing its expertise on computer conferencing and distance learning and co-operating in joint initiatives such as the national literacy resource sharing project. (6.3)

When the strategy is implemented, adults entering any LBS delivery agency will have a new option for learning. Computer-based learning will open new opportunities for adults to prepare for the community and workplace of the 21st Century, and will ensure that the literacy field in Ontario maintains its technology leadership role.

1. Introduction

Early definitions of literacy

The concepts and definitions of literacy have changed considerably over time, but have centred on a basic capacity to read, write, and calculate. Early work in the literacy field defined literacy as a condition that adults either had or did not have—either they possessed basic literacy skills or they did not. However, this approach is not adequate for the new century.

- It fails to consider that as a society changes, the literacy demands it places on its citizens change as well. The Canada of the 1950's, for example, required a much different level of literacy than our more modern, technological society.
- The skills required in one country are very different from the skills required in another country; a person with a grade nine education may be regarded as having excellent skills in a developing country but would not be able to function well in an industrialised, technological society.
- Early definitions of literacy did not consider that literacy is about lifelong learning and that literacy skills are maintained and strengthened through regular use but erode with lack of use.

Newer definitions of literacy

By comparison, the 1994 International Adult Literacy Survey (IALS), a 12-country, comparative study of adult literacy incorporates a more sophisticated definition of literacy. IALS promotes the definition of literacy as a skill-based proficiency continuum—that is, literacy is a relative rather than an absolute concept.

IALS defines literacy as: "Using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential." Literacy cannot be narrowed to a single skill able to deal with all sorts of texts, nor can it be defined as an infinite set of skills able to address every type of text. For this reason, IALS defines three distinct literacy types—prose literacy, document literacy and quantitative literacy—and five levels of literacy within each type.

Computer literacy

Over the past 25 years, the term literacy has come to be prefaced with different adjectives to denote particular sets of basic skills. Computer literacy was the first, and has become commonplace in our culture. A recent search on the Internet by the *Infoseek* search engine, for example, found 24,886 documents under the term computer literacy.

In its beginnings, the term computer literacy addressed an understanding of hardware and software development. The learner was expected to know the parts of the computer (central processing unit, keyboard, motherboard, hard drive, monitor). In

these early years, programming was a necessary basic skill. To guide the computer to do what you wanted it to do you had to know a programming language. Users later had to know DOS operating commands in order to perform functions.

Then more sophisticated operating systems for PCs and the Macintosh were developed, together with ready-made applications such as for word processing. The new software allowed computer users to do useful work without first constructing a program to make the computer carry out whatever function was needed. Word processing, spreadsheet, and database application programs became widespread in business and emerged in the educational scene as productive tools in the learning process. These changes caused a shift in the definition of computer literacy, with more emphasis being placed on how to work the computer rather than on how the computer worked.

In its everyday usage, the term computer literacy has come to refer to basic skills in operating a computer, generalised competence in basic software applications, and familiarity with specific software applications required for the workplace. Sometimes the ability to manipulate operating systems is included in the definition.

Computer-based learning in literacy

As these developments were going on, adult literacy practitioners began looking seriously at technology as a learning tool and came to understand the value of computers in basic literacy learning. They found that:

- The computer could be a valuable tool to help learners with basic literacy. The text, images, animation, and sound as well as the interactivity, including over the Internet, could enhance learning in basic language and mathematics.
- When the employability goal of adults involves using computers, they should develop familiarity with the textual demands of computers and receive appropriate instruction.
- With the popularising of technology caused by pervasive television advertising of computers and popular Web addresses, learning on a computer could be a powerful motivator for adults who are considering returning to school.
- The acquisition of basic computer skills was required for any computer-based learning to take place.

Responding to the positive experiences of LBS agencies in Ontario, the Literacy and Basic Skills (LBS) Program embodied support in its Program Guidelines for the positive role of computers in literacy work where it is part of a literacy learning process. The LBS Section uses the term "computer-based learning in literacy" instead of computer literacy to refer to this positive role. As we have seen, the

latter term often includes more advanced uses of computers, beyond the scope of the skills needed in basic literacy learning.

The LBS Program equips adult learners with the skills necessary to make a successful transition to other areas of the new, comprehensive education and training system or to employment. It recognises that basic computer skills will make that transition easier. The key contributions that LBS agencies make include:

- building learning activities around computer language and vocabulary in order to prepare learners to use computers;
- instructing learners in the generic computer skills required for computer-based learning in literacy (for a list of these skills, please see Appendix A); and
- providing a variety of opportunities for adults to use computers as they engage in literacy learning.

Beyond the scope of the LBS Program mandate are:

- preparing learners in advanced computer skills, such as manipulating operating systems or programming computers; and
- training learners in specific computer software applications to a level required for workplace settings, for example, specific training in Microsoft Word.

More employment-specific training programs within the emerging training system may build upon the floor of skills provided in the LBS Program in order to teach the specific hardware and software skills required in work settings.



2. Transforming Literacy and Basic Skills Delivery

A substantial proportion of Ontario adults requires assistance with literacy and basic skills if they are to play a full role in their communities and in the workplace. According to the International Adult Literacy Survey (IALS), 44% of adult Ontarians have difficulty with the literacy and basic skills demands of daily life. Approximately 20% of adults in Ontario lack basic literacy skills, while a further 24% could be considered to have inadequate skills to meet changing labour market needs.

The Literacy and Basic Skills (LBS) Program is responding to the challenge of assisting these adults to take part in a more prosperous Ontario by supporting LBS literacy agencies to offer learner-centred services in communities across the Province. The LBS Program will serve more than 55,000 adult learners in Ontario in 2000/2001.

In LBS agencies, adults gain full access to the knowledge and skills that are relevant to their goals—whether the goals are access to employment, further education and training, or increased independence.

As a result of the implementation of learning outcomes, adults in the LBS Program are able to demonstrate their learning through successfully completing activities that are closely tied to their goals. Their learning is documented through a common, readily transferable language of progress covering five levels of achievement.

Through co-ordinated planning of literacy services, LBS delivery agencies offer a mix of services in each community to suit the learning needs and styles of adults living there.

Better skills, more jobs

Ontario is working to establish a single, effective employment and training system that meets the needs of workers and employers in Ontario. The provincial report *Better Skills, More Jobs: Ontario's Plan for Tomorrow's Job Market* (Province of Ontario, 1998) outlines the features of the new system, in which clients will be served by one comprehensive approach that offers the following specially designed programs:

- literacy and basic skills upgrading;
- on-the-job training;
- strategic skills training;
- self-employment assistance; and
- local skills initiatives.

The report identifies the importance of computers and computer-based learning opportunities for the success of this system. These opportunities will be woven throughout the training options in recognition of the central place that the new technologies will occupy in the communities and workplaces of the 21st Century.

Ontario Jobs and Investment Board (OJIB) report

The Ontario Jobs and Investment Board (OJIB) was set up to consult broadly on jobs and economic growth and to advise the Ontario Government on recommended activities to create a more dynamic and prosperous province. Its influential March 1999 report entitled *A Road Map to Prosperity: An Economic Plan for Jobs in the 21st Century* (Province of Ontario, 1999) emphasises the acquisition of knowledge and skills as a primary strategy for enhancing the economic prospects of workers in Ontario.

One of the "21 priorities for the 21st century" calls for the development of "innovative and flexible education and training delivery systems," including:

- enhancing the use of advanced technology in learning;
- creating an Ontario Distance Education network to improve access to learning for part-time and at home learners; and
- developing a province-wide digital library network.

The Road Map stresses the value of partnerships, accessibility, high standards, and innovation to accomplish the above goals. Computer-based learning for adult literacy learners falls directly within the priority areas identified in the report.

A new, exciting mode of delivery

The LBS Program supports integrating computer technologies into the delivery of LBS services, consistent with the direction established by the two reports for the emerging comprehensive education and training system. This means that as LBS agencies equip adults with literacy, numeracy, and other basic skills—such as problem-solving and goal-setting—they are able to assist adults to develop basic computer skills in order to take part in computer-based learning in literacy.

The Government of Ontario has always encouraged variety in the training methodologies used in adult literacy, realising that the needs of adults vary and that individual literacy agencies know their clientele's needs. This approach has led to diversity and ensured that Ontario adults have the possibility of finding programming which meets their learning style.

Historically, three modes of literacy delivery have been offered by LBS agencies:

- one-to-one tutoring;
- small group literacy; and
- classroom learning.

Initially, most literacy learning in Ontario—regardless of stream or sector—tended to be one-to-one, especially with those learners requiring basic literacy skills (LBS Levels 1 to 3). Over time, small group and classroom instruction grew up to complement this one-to-one methodology.

Small groups are popular for all levels, but the classroom option especially appeals to intermediate learners (LBS Levels 4 and 5), who have some strong skills and some weak skills. While these learners need individual attention, they may feel more comfortable in larger and more formal group and classroom settings.

With the recent advances in hardware and software technology, computer-based learning has been emerging as a new, fourth mode of literacy delivery, one that appeals to learners at all LBS levels.

Computer-based learning

Using a computer for literacy learning represents a new and fundamental addition to the ways in which literacy may be offered.

A survey was recently conducted of adult literacy learners in Ontario, *Computers and Adult Literacy: Voices of Computer Literacy Students in Ontario*, (Canadian Council on Social Development, 1999). The authors, Jean Lock Kunz and Spyridoula Tsoukalas, report that high a proportion of learners feel that computers make learning more fun and allow them to learn on their own.

Computer-based learning may enable literacy learners and their teachers to energise and transform their relationships in positive ways. Computers provide easy access to vast software libraries and Internet-based information. This direct access to information frees the literacy practitioner to be more of a guide or mentor, and less of a mere dispenser of information. In turn, the adult literacy learner can become a co-explorer and a co-creator of knowledge with the practitioner and other learners.

In addition to these benefits, new computer-based multimedia learning technologies introduce new dimensions of interest, flexibility, and relevance for adult literacy learners. Recent research in the field of adult cognition confirms the promise of multimedia technologies for this group. Instruction designed to appeal to both the left brain (with which we collect facts, process language, and analyse information) and the right brain (with which we see how objects exist in space, understand metaphors, dream, and create new combinations of ideas) produces better initial understanding and better long-term retention. These aims are accomplished by presenting information in both abstract form (language, charts), and concrete form (illustrations, three-dimensional models, and animation). For adult literacy learners, many of whom have not experienced much success in the traditional school system, this change is an exciting new chance at education.

A decade of experience with technology

Literacy and Basic Skills delivery agencies in Ontario are well prepared to implement the new computer-based learning delivery option. With leadership and support from the LBS Section and the National Literacy Secretariat (NLS), Human Resources Development Canada (HRDC), they have been pioneers in using computer

technology to bridge the over one million square kilometres that make up Ontario. In doing so, they have assisted in the development of an innovative computer-based, online literacy learning environment.

In 1988, the LBS Section funded the Computers and Learning Centre at George Brown College in order to create a computer discussion network for literacy agencies in Ontario. Years before the World Wide Web existed, Ontario literacy practitioners connected to each other on 1,200-baud modems and datapac telephone lines. In 1995, the AlphaCom system migrated to a Web-based discussion platform. Now a service of AlphaPlus Centre, this bilingual computer communications system links practitioners, volunteers, and learners. More than literacy sites across Ontario participate in electronic discussions, learn from online workshops, and share literacy information and expertise.

The Literacy and Basic Skills Section has supported literacy agencies in upgrading their existing computer stock or purchasing new computers for administrative and service development purposes in the past 10 years.

In 1998/99, the LBS Section extended this support to the area of instruction by funding the purchase of, and support for, new computers for the use of learners in all LBS-funded literacy delivery agencies. Learners in community agencies, in school boards, in community colleges, or in Deaf, Native, Francophone and Anglophone settings now have access to computers for literacy learning.

Beginning in 1996, the Ministry of Training, Colleges and Universities and the National Literacy Secretariat initiated a multi-year initiative to develop an online adult literacy learning resource in English and in French, together with learning activities and demonstrations. The new resource is titled AlphaRoute. AlphaPlus Centre manages the development and implementation of AlphaRoute in partnership with MTCU and NLS.

When AlphaRoute becomes a LBS Program delivery option in September 2000, LBS agencies will be able to serve adults who currently cannot participate in the LBS Program because of distance or because of inconvenient time schedules. LBS agency staff will provide online mentoring to learners from the LBS agency site. Learners who require additional support may be matched with a local facilitator, a support person in the learner's home community. Through these supports, the learner will be assisted to participate in literacy studies online.

One of the most important components of the current phase of AlphaRoute is working with literacy agencies from across Ontario in order to develop more learning activities. The new online curriculum resources available through AlphaRoute are the products of eight Anglophone and Francophone agencies that responded to a call for MTCU/NLS literacy development proposals with innovative ideas and demonstrated capacity for multimedia authoring. The AlphaPlus Centre assisted the eight agencies to develop multimedia learning materials for the AlphaRoute Web environment.

New forms of practice

Through using computers in their programming, and through developments such as AlphaRoute, many LBS agencies and practitioners in Ontario have been looking seriously at technology as a learning tool. They understand the value of computers in literacy training. As a result, a number of literacy agencies and organisations have developed a range of exciting new forms of practice.

- Some agencies are weaving language learning with instruction in basic computer skills that are needed to engage in any computer-based learning in literacy.
- Learners with different learning styles are working with new multimedia learning technologies, with their rich blends of text, graphics, sound, animation, video, and interactivity.
- Rural adults who may have been geographically isolated and unable to get to a LBS agency may now consider distance education participation by way of the Internet through the AlphaRoute distance learning environment.
- Deaf literacy learners are utilising video-conferencing, real-time chat, and asynchronous (not in real time) Web-based discussions as aids to their literacy efforts.
- Adults bound for employment are learning the basic rules and conventions for reading and writing the computer-generated texts, increasingly the norm in Ontario offices and workplaces.

New questions and issues

While some Ontario literacy agencies have been working with learners on computers for years, many others are now learning these skills. Questions and issues are arising in the field, which require the guidance of a comprehensive strategy for computer-based learning in literacy. Examples of questions and issues include:

- How does the LBS Program encourage and support computer-based learning?
- How can learners gain access to modern computers and relevant, interesting software?
- What skills do practitioners need in order to be effective using computers?
- How can agencies best incorporate the use of new technologies into their business plans?

- What technologies may best serve Deaf learners, Northern learners, and learners with disabilities?
- How can literacy agencies partner with governmental and non-governmental organisations to build their technology capacity?

A strategy is required to guide LBS-funded agencies to answer these and related questions, and to realise fully the potential of this exciting new mode of literacy learning.

Tools for a New Beginning strategy

Tools for a New Beginning is a strategy that positions LBS delivery agencies as key partners and technological innovators in the new, comprehensive, and co-ordinated employment and training system for Ontario. This system is capable of serving more adult literacy learners, serving them in new ways, and making their learning more effective.

The strategy is a comprehensive plan to:

- support expanded participation in computer-based and online learning through the LBS Program;
- support learners to take advantage of the new technologies in their literacy and basic skills learning;
- support literacy agencies and practitioners to use effectively computer-based learning;
- provide LBS services to more Ontario adults, in new and effective ways, through computer-based learning;
- involve learners in a new culture of connectivity within the adult literacy field; and
- promote new partnerships of LBS delivery agencies with government, non-profit agencies, and the private sector in order to extend the technology leadership role of the adult literacy field in Ontario.

3. Tools for a New Beginning: the Strategy

Vision of the strategy

The heart of the Literacy and Basic Skills Program's strategic approach is a vision to guide computer-based learning in literacy in Ontario:

Vision

Computer-based learning will enable LBS delivery agencies to offer more flexible, dynamic services and to support Ontario adults to participate effectively in the communities and workplaces of the 21st century. Through up-to-date computer hardware, software, and the Internet:

- Learners will encounter new ways to explore, create, and share knowledge related to their goals and interests while building the basic literacy and computer skills they need in order to lead fulfilling lives and to obtain rewarding employment
- Literacy practitioners will discover fresh tools for motivating and equipping adults to be active, lifelong learners and to reach their personal and employment goals
- Literacy delivery agencies will find effective new options for responding to the diverse needs and challenges of learners, locally and at a distance, and will be key partners in the new emerging training and employment system
- More adults in Ontario will be able to access LBS services in new and flexible ways

Principles informing the strategy

The following principles inform the strategy:

1) Learner-centred

The training needs of learners must take precedence over the technical capacities of hardware and software available when a delivery agency is deciding whether, and how, computer technology may be used. Literacy agencies may be tempted to seize upon new and exciting technologies and only afterward to look for specific ways to apply the technologies in the learning setting. This inverted approach is both costly and unproductive.

Many computer-based packages and approaches embody instructional philosophies that are based on the methods of repetition and drill. While repetition and drill have a place in literacy settings, literacy practitioners should be aware that computer-based approaches have much more to offer for literacy instruction. New instructional uses of the Internet and new computer-based learning software packages and approaches encourage adult literacy learners to explore, make choices, and exercise self-direction. At the same time that these adults are acquiring knowledge that is personally relevant to them, they are also building skills and attitudes that can serve them as the foundation for a lifetime of independent learning.

While computers may form an important part of an instructional program, for various reasons they may not be appropriate for all learners or for all instructional activities. The learning styles, needs, and interests of learners will guide practitioners in making these decisions.

Learning on a computer may be a powerful motivator for adults who are considering a return to literacy upgrading. For this reason, LBS agencies may want to feature computer-based learning in outreach.

2) Instructor-aided

No computer-based instructional software substitutes for the involvement of an instructor, whether in person or online. The instructor's knowledge, judgement, and creativity is the key to the success of any instructional approach, whether or not the approach is based on computers.

3) Program friendly

The strategy identifies opportunities to expand, improve, and extend literacy delivery. It does not offer computer-based learning to replace current practices or reduce the resources available for other modes of instruction. Computer-based learning is seen as an important and exciting new option, but not as a panacea for all learning challenges.

The structure of the strategy

The *Tools for a New Beginning* strategy is organised around six major directions. The strategy will guide Government, the literacy field, and other stakeholders in implementing computer-based learning.

Tools for a New Beginning

Strategic directions

1. Support expanded participation in computer-based and online learning through the LBS Program

- Provide support and encouragement for using computers through the LBS Program
- Identify opportunities for integrating computer-based learning in the LBS Program

2. Support learners to take advantage of the new technologies in their literacy and basic skills learning

- Assess learners in all LBS agencies at entry for learning needs and interests related to computer-based learning
- Provide ample, daily learner access to computers, software, and the Internet
- Instruct learners in the basic computer skills required for computer-based learning
- Involve learners in the selection of appropriate computer-based learning software and resources
- Provide learners with new locally produced resources for computer-based learning

3. Support literacy agencies and practitioners to use computer-based learning effectively

- Catalogue and share best practices in computer-based learning in literacy
- Develop online tools to support literacy instruction
- Support professional development for practitioners in effective computer-based instruction
- Build the capacity of agencies to develop effective technology plans
- Identify supports for maintaining hardware and software
- Define and support volunteers' new roles that emerge from the use of computers in literacy instruction

4. Provide LBS services to more Ontario adults, in new and effective ways, through computer-based learning

Through computer-based learning, provide new or enhanced services to:

- adults who are deaf
- adults who have challenges or disabilities
- adults whose schedules do not permit them to participate in regular LBS programming
- Ontario Works (OW) participants
- remote areas where traditional delivery modes are not feasible

5. Involve learners in a new culture of connectivity within the adult literacy field

- Enhance the Internet links among learners, government, field support and service organisations, literacy delivery agencies, and practitioners.

6. Promote new partnerships of LBS delivery agencies with government, non-profit agencies, and the private sector to extend the technology leadership role of the adult literacy field in Ontario

- Identify key technology stakeholders in literacy in Ontario
- Provide strategic support for partnerships on behalf of computer-based learning in literacy

4. The Strategy in Detail

Strategic direction #1

Support expanded participation in computer-based and online learning through the LBS Program

- Recognise computer-based learning as a mode of delivery of LBS services
- Provide support and encouragement for using computers through the LBS Program
- Identify opportunities for integrating computer-based learning in the LBS Program

LBS support for computer-based learning

The two provincial reports describe new directions in training. These reports are *Better Skills, More Jobs: Ontario's Plan for Tomorrow's Job Market* and Ontario Jobs and Investment Board's *A Road Map to Prosperity: An Economic Plan for Jobs in the 21st Century*. Both reports identify computer-based training as a key element of the emerging comprehensive education and training system.

Two features of the Literacy and Basic Skills (LBS) Program in particular provide support for computer-based learning in literacy. These features are the LBS Program Guidelines and the Recognition of Adult Learning Strategy (RALS). As well, the establishment by the Ministry of Training, Colleges and Universities (MTCU) and the National Literacy Secretariat (NLS) of the mandate for AlphaPlus Centre to support the use of technology by LBS agencies supports computer-based learning in literacy.

The LBS Program Guidelines encourage LBS delivery agencies to use computers as part of literacy training. In doing so, they recognise the value of basic computer skills in enhancing both employability and learning opportunities.

As is discussed above, the LBS Program encompasses instruction in basic computer skills that is embedded within literacy training. Other partners in the emerging education and training system, such as specific skills training programs and on-the-job training programs, build upon this foundation of generic literacy and computer skills with training in particular software applications or in computer programming.

RALS is a multi-year initiative that enables adults in the LBS Program to demonstrate their learning through successfully completing activities that are closely tied to their goals. Learning progress is documented through a common, readily transferable language of progress—the LBS learning outcomes—covering five levels of achievement. The common assessment process of RALS ensures that the

assessments made of learner progress by an LBS agency are understood and accepted by all other LBS agencies, and over time, by all other key stakeholders in the employment and training system.

The two components of RALS—learning outcomes and common assessment—are consistent with, and provide support to, computer-based learning.

The learning outcomes approach supports practitioners to use computer-based learning. The MTCU document *Working with Learning Outcomes* (July 1998) states: "Opportunities are identified in the Matrix for training in the use of computers as a means of enhancing literacy. However, this form of training is not treated as a learning activity in its own right with separate outcomes."

The learning outcomes approach offers a number of opportunities for using computer-based learning. For example, in the Communications domain, under the learning outcome Write Clearly to Express Ideas, the Spelling skill set Transition Markers include using a computer spell check tool. As well, an LBS Level 4 Success Marker calls for "using spreadsheets appropriately to convey specific types of information." These references are supportive of the use of computers. However, more references need to be developed in the LBS learning outcomes to articulate how computer competencies may be embedded in the literacy training process.

As part of the common assessment approach of RALS, LBS agencies record the achievements of learners in terms of real life tasks related to their goals that the learners can carry out, or demonstrate. As well, achievements are recorded in terms of the integrated generic literacy and basic skills that are embedded in those tasks.

Consider an example related to technology. Learners who show that they can use an automated bank machine (ABM) to withdraw funds are demonstrating the successful integration of a number of discrete literacy, numeracy, and basic computer-related skills. An LBS agency would assess and record the demonstration—the ABM withdrawal and the integrated skills embedded in the activity—with the help of learning outcomes, and the assessment would be understood by other LBS agencies. This common approach for measuring progress ensures that literacy learners receive full recognition for their achievements in computer-based learning, and the record of that progress will be portable among LBS delivery agencies and other stakeholders of the education and training system.

Another support for computer-based learning is through the role of AlphaPlus Centre. In 1995, MTCU, with the co-operation of NLS, reviewed the mandate and core activities of the new AlphaPlus Centre. It had become apparent that computer technology would become increasingly important for literacy delivery. AlphaPlus Centre was mandated to be a central means of support to the full range of LBS technology-based delivery services and projects. As a result of the initiative taken by MTCU and NLS, AlphaPlus Centre is now well positioned to support computer-based delivery as a fourth LBS delivery mode. In recognition of this core mandate for supporting

technology, AlphaPlus Centre is mentioned in various places as a key support for the proposed activities of the strategy.

Several ways have been presented in which MTCU supports computer-based delivery within the LBS Program. As well, an area for action has been identified: an addition to the LBS learning outcomes. Many more supports are required to fully implement computer-based learning as an LBS delivery mode. The remainder of the strategy will consider these supports. However, the first important step is to signal the MTCU commitment to the new delivery mode.

Action:

Computer-based learning is recognised as a new mode of delivery of LBS services and LBS administrative and program support will be provided for it.

1.1

Integrating computers into instruction

We can identify a number of opportunities for LBS agencies to integrate computers into literacy and basic skills instruction through the LBS Program. LBS delivery agencies and practitioners may:

- use on-screen language as "curriculum" while teaching basic computer skills;
- work with instructional software;
- assist learners to understand, create, and manipulate hypertext;
- utilise computers for distance learning;
- develop computer-based assessment; and
- utilise adaptive and assistive devices.

Computer language as curriculum

As agencies prepare adults for computer-based learning by teaching a set of generic computer skills, the agencies may use the on-screen vocabulary and language usage that learners are encountering as literacy curriculum.

When learners identify an interest in gaining basic computer skills, there may be a temptation to place more emphasis on computer skills than on language acquisition. However, many practitioners now realise that teaching basic computer skills offers real opportunities for refining literacy skills. Computer-related terms such as "the Web," "digital," and "hot links," now saturate media and casual conversations. Adults with limited literacy skills are curious about these terms and highly motivated to enter into this dialogue.

A number of agencies are exploring the weaving of basic computer skills with basic literacy skills. Their work should be broadly shared in the literacy field.

Action:

Best practices in integrating instruction in literacy skills and basic computer skills will be collected and made available online and in print format by AlphaPlus Centre.

1.2

Instructional software

Literacy agencies use instructional software packages specifically designed to build the reading, writing, and math skills of adult literacy learners. There is currently a wealth of instructional software for adults, much of it using rich blends of multimedia.

Choosing software that strengthens communication and numeracy skills will empower learners and help them assume responsibility for their own learning. However, software that patronises adults, because it was designed for children, will alienate them from computer-based learning.

Computer technology is frequently treated as a specialised knowledge, beyond the capacity of users such as literacy learners. However, the experience of adult literacy practitioners in Ontario is that learners know best what software works for them, and learners are ready to voice their preferences. LBS delivery agencies should solicit the views of learners and incorporate these views in their software selection decisions.

Excellent guidance on choosing software relevant to literacy instruction may be obtained from several sources:

- AlphaPlus Centre, Ontario's literacy and language training resource, collects reviews and loans software. Reviews appear regularly in their English newsletter *Take Note* and in French in *Quoi de neuf*. AlphaPlus Centre also contributes software reviews to the Ontario Literacy Coalition's newsletter *Literacy on the Move*. The National Adult Literacy Database (NALD) is another source of information.
- A readily available and excellent source of software reviews is the Canadian newsletter, *Connect: A National Newsletter for Technology and Adult Literacy* from Ottawa.

It is expected that AlphaPlus Centre will purchase test site licenses so that software may be loaned to LBS agencies throughout Ontario for evaluation.

One additional resource that would be extremely helpful to literacy agencies is a set of standards for effective instructional software for adult literacy. Looking to other jurisdictions is useful in this regard.

Massachusetts has created a statewide Adult Literacy Technology Team (MALTT) and five regional technology teams in order to help practitioners and learners explore technology issues and plan technology training. The regional teams vary in purpose and focus. For example, the Boston area regional team has focused for several years on learner and practitioner use of the Internet. Other regional teams have focused on review and use of software and other issues. A strength of this Massachusetts plan is that it was developed with the assistance of over 30 practitioners. In turn, the experience in technology planning gained by these practitioners will continue to reside in the field. A similar initiative is required in Ontario to support the frequently difficult decisions that LBS agencies will be making.

Action:

The development and dissemination of a set of standards for software acquisitions by LBS delivery agencies will be co-ordinated by AlphaPlus Centre.

1.3

Integrated learning systems

Integrated computer-based software packages link a basic skills curriculum with a management system for learner assessment. Many large, integrated learning systems are available for adult literacy learners. Examples are Pathfinder, Autoskill, Plato, and Invest Star 2010-W. As a result of the relatively high cost of these systems, delivery agencies will wish to evaluate their instructional approaches and capabilities with special care.

Important technical features of integrated learning systems that are desirable include:

- the option of "unbundling" or using parts of the system for customised purposes;
- the capacity for original authoring, such as inputting a learner's story as the basis of exercises;
- the provision of open architecture regarding the capacity to integrate other software packages from other companies in order to extend the usefulness of the learning system; and
- the readiness of the system to make use of the Internet in productive ways.

Hypertext

Standard software, such as word processing or spreadsheet applications, can be used to create and manipulate "hypertext," the term that is most frequently used when referring to the new forms of reading, writing, and calculating required by devices such as automated bank machines and Web-based documents.

Readers approach print-based documents in a linear, chronological fashion, reading one line or page after another. Dictionaries, encyclopedias, or telephone books require more sophisticated search skills, but the logic is still linear.

Hypertext requires that the reader follow embedded links. It is fundamentally non-linear, and so requires an expanded set of literacy skills on the part of readers and writers. Reading and writing hypertext with computers and computer-based devices becomes a series of choices and links requiring the active participation of the user.

Hypertext encompasses reading and writing computer-based documents, manipulating computer spreadsheets, operating computer databases, and navigating the World Wide Web.

Because of the increasing prevalence of hypertext, standard software applications utilising hypertext become important literacy-learning tools and may meet the needs of many learners. These applications include word processing packages, spreadsheets, database software, and Web browsers. The applications are popular with learners and have the added benefit of not only allowing learners to do improve their literacy skills, but also to acquire basic knowledge of applications required for almost any occupation. Examples of using standard software applications in a literacy setting include:

- entering a personally written text using a word processing application;
- developing a personal budget using a spreadsheet software application; and
- searching the Web for information about a personal occupation.

The strategy for computer-based learning in literacy finds a central place for using these standard applications.

Distance learning

An important opportunity for integrating computer-based learning into the LBS Program is distance learning through the Internet. Distance learning is a term used to refer various means of extending LBS services to learners who are either not able to participate in the LBS Program because of distance or inconvenient time schedules. A key example of this form of learning is AlphaRoute.

From August 1996 until June 1997, the LBS Program and the NLS carried out Phase One of a multi-year initiative to develop a Web-based adult literacy resource in

English and in French, together with learning activities and learning demonstrations. The new resource is called AlphaRoute.

In 1998, AlphaPlus Centre took over development of AlphaRoute, in partnership with the LBS Section and NLS. Phase Two was completed in September 1999. Key aspects of Phase Two are:

- peer-to-peer interaction;
- based on the learning outcomes approach;
- support for distance learners; and
- adults developing independence in their learning.

Over 80 hours of online activities in both French and English—a total of 160 hours of learning activities—were developed. These activities are linked to the LBS learning outcomes and to themes of interest to adults. The action research portion of Phase Two established that learners at all LBS levels are able to make progress toward their learning goals through the AlphaRoute online environment.

The goal of Phase Three is for MTCU to launch AlphaRoute as a delivery option for LBS agencies in September 2000. Online environments for Native and for Deaf learners will be introduced in September 2001. Because of the need for initial training and technical support, participation in AlphaRoute by LBS agencies will be phased in over 2000/2001 and 2001/2002.

One of the most important parts of Phase Three has been for AlphaPlus Centre to work with eight literacy agencies from across Ontario in order to develop more online learning activities. These eight agencies were chosen from a number of LBS agencies that responded to a call for MTCU/NLS project proposals to develop multimedia content for the AlphaRoute environment. The successful agencies demonstrated an interest in and capacity for multimedia development work as well as innovative ideas for online learning activities. AlphaPlus Centre will integrate into AlphaRoute the multimedia learning activities developed by the eight agencies in time for the September 2000 launch.

Using AlphaRoute, LBS agencies will be able to enrich delivery services both for learners who are able to attend their instructional sites in person, as well as for distance learners. Distance learners will practice and complete activities online. Completed activities will be automatically recorded in a learner's online portfolio, which will represent a record of their work. The learners will be able to e-mail their completed activities to an LBS agency staff person or experienced tutor acting as their online mentor, and the staff person will offer guidance and encouragement. As well, learners who require additional assistance will receive support in their community from local facilitators affiliated with the LBS agency.

Extending the distance learning delivery model to adult literacy students is a challenging endeavour. Many supports, such as software and hardware availability and face-to-face and online instructional assistance, need to be co-ordinated to assist literacy learners in the LBS Program when it is provided at a distance. For this reason, agencies wishing to deliver LBS services at a distance are advised to develop a plan for distance delivery that takes into account the particular challenges they face as well as the resources that will be required. AlphaPlus Centre is an important information for this type of planning, as are the LBS agencies that have already begun to deliver at a distance.

An important project for distance learning is one currently being carried out by Contact North, northern Ontario's distance education and training network. Contact North, in co-operation with two LBS delivery agencies and AlphaPlus Centre, is conducting a project in 2000/01 that will assist two LBS agencies to test AlphaRoute's services for learners who do not have physical access to the sites of the agencies.

Future plans for AlphaRoute include expanding the learning activities in terms of the breadth and depth of coverage both in the five LBS levels and in the theme areas that are addressed. For example, there are plans to respond to the desire of learners participating in Phase Two for more employment-related activities.

Action:

Distance learning through the AlphaRoute Web-based learning environment will be integrated as a LBS delivery option beginning September 2000.

1.4

The World Wide Web

The World Wide Web offers a vast array of learning opportunities for adult literacy learners. For example, learners using the Internet and the Web:

- acquire geographic awareness based on understanding the global nature of Internet connections and communications;
- learn to evaluate the validity of information acquired through Internet resources;
- learn to synthesise data acquired through the Internet into a meaningful whole; and
- develop the skills required to rate information for relevance in meeting a specified need.

The LBS Program and National Adult Literacy Database (NALD) have supported LBS literacy agencies in Ontario over the past three years to connect to the Internet. Use of the Web establishes and supports the concept of lifelong learning. Visiting Web pages, using search engines for research, and logging on regularly to check the Human Resources Development Canada job listings are examples how adult literacy practitioners and learners are using the Internet.

There are tools to assist practitioners and learners to find and select useful Web resources. For example, the AlphaPlus Centre's Web-based AlphaPlus Index to Web Resources lists useful Web addresses for learners and practitioners. These pages are carefully selected and annotated, linking to Web addresses that contain lesson plans and learning activities. Similarly, NALD offers an index of useful Web resources.

Peer-to-peer interaction

The literacy community has a decade of experience using computer conferencing and e-mail to connect practitioners and learners across Ontario, Canada, and the world. The experience of the Ontario literacy community has shown that dynamic literacy learning occurs when learners have opportunities to connect with practitioners and with each other. AlphaPlus Centre has been hosting Web-based discussions for the past 10 years. As well, many literacy agencies have had success using e-mail to establish pen-pal relationships among learners from different agencies.

An exciting new Web-based activity in adult literacy in the U.S. is the virtual classroom visit in which learners in a literacy agency interact with learners in another agency through computer conferencing, Web cameras, chat rooms, and e-mail. This activity should be piloted in Ontario to provide dynamic links among distant literacy agencies.

Action:

New opportunities for learners to connect with one another through methods such as virtual classroom visits will be co-ordinated by AlphaPlus Centre.

1.5

Computer-based assessment

Many literacy practitioners are excited about the possibilities of using computers for assessment. They note that when technology is added to assessment, new possibilities arise. Individuals of all types seem to enjoy computerised, game-style testing. The military, in particular, has had great success with simulated testing in its training programs. Many users say that the computer offers the possibility for "making assessment both tailored to the individual and more integral to the educational process." "Computerised testing," says John Sabitini in his article, *Using Technology for Assessment in Adult Learning*, is "erasing the distinction between assessment and instruction in many cases." (Hopey, C.E. 1998. Technology, Basic Skills and Adult Education, Information Series No. 372. Philadelphia: University of Pennsylvania, National Centre on Adult Literacy).

When computers are used for assessment in the field of adult literacy, a number of factors need to be taken into consideration.

- Assessment procedures should be developed and administered to be supportive of adults in literacy learning settings, many of whom have experienced failure in the regular school system and have had bad experiences with standardised testing.
- Broader measures of intelligence should be employed, recognising that many standardised and computerised tests provide narrow measures of a person's capabilities.
- Assessment environments will take into account the kind of test phobia many adult literacy learners have developed.
- The LBS Program's Core Quality Standards promote a learning assessment process that "involves learners and contributes to their development."

In Ontario, a variety of assessment tools have been developed over the past ten years to give literacy learners opportunities to demonstrate their abilities in a variety of ways. The LBS Section funded projects to revise six assessment tools that were developed in different Anglophone literacy organisations in Ontario so that they will relate to the five LBS Levels. The LBS Section, with the assistance of a provincial working group of these projects, co-ordinated the work in order to ensure the compatibility of these tools and consistency with the common assessment approach of RALS.

One of these assessment tools, Common Assessment of Basic Skills (CABS), is being considered for adaptation as online assessment tool. That is, the online version will be suitable for interactive, distance learning applications. This is a promising first step toward online assessment in support of distance learning through AlphaRoute.

Action:

Projects will be invited to develop online assessment tools and approaches suitable for distance learning applications.

1.6**Adaptive and assistive devices**

Learners can use computers and computer-related devices for adaptive and assistive purposes in literacy learning. For example, the Balmoral Centre of the Lakehead District School Board is researching the use of speech-activated software for literacy instruction. The software transforms speech into computer text.

For a discussion of the many technology-based adaptive and assistive options available to LBS agencies and learners, see Strategic direction #4 below.

Strategic direction #2**Support learners to take advantage of the new technologies in their literacy and basic skills learning**

- Ensure that LBS learners will have opportunities to take part in computer-based learning
- Provide ample, daily learner access to computers, software, and the Internet
- Instruct learners in the basic computer skills required for computer-based learning
- Provide learners with new Canadian resources for computer-based learning

Assessing computer-related goals

At present, most initial literacy assessments refer only to needs and interests related to language, mathematics, and self-management. If computer-based learning is to become an integrated part of LBS delivery, initial, on-going, and exit assessment tools and approaches that cover computer-related goals as well need to be developed.

Action:

Projects will be invited for sharing and developing means of assessing for learning needs and interests related to computers.

2.1

Access to computers for learners

A key to the *Tools for a New Beginning* strategy is ample, daily access for learners to Internet-ready computers. For some instructional purposes, computers can be older models with basic capacity for word processing or spreadsheet applications. However, more current hardware and software is required where special multimedia learning software is being used, where adults need to learn on the type of equipment that they will encounter in employment settings, and where the adult will be using the Web.

The computers for these more demanding applications should be of current speed and drive capacity and be equipped with multi-media hardware and productivity software. They should also include a CD-ROM or DVD player, sound (in and out with microphone, speakers, and earphones), video capacity, 56K modem, and a minimum of 6 gigabytes of storage.

At present, learner access to properly equipped computers varies considerably among LBS agencies. In 1995, a comprehensive survey was completed of learner access in Ontario literacy agencies. At that time, only 12% of learners had a minimum level of access. A recent survey of 1100 adult literacy learners in Ontario, *Computers and Adult Literacy: Voices of Computer Literacy Students in Ontario* (Canadian Council on Social Development, 1999) reported that most learners have some type of access to computers in the literacy agency they attend. However, 30% responded that there are not enough computers in the agency. Almost 20% responded that the computers available for learners are out of date.

The distribution by AlphaPlus Centre of computers to LBS agencies in 1998/99 to be used by learners has ensured a minimum level of access to one up-to-date computer in smaller LBS agencies and two computers in larger LBS agencies. Many agencies already had computers for learners, but for some, these new computers will have been the first. Clearly, a standard is required to ensure ample access.

The standard set for Ontario must (a) ensure a reasonable possibility for daily access for learners to computers while it (b) recognises the limits of resources of agencies for purchasing and maintaining computers. The *Massachusetts Adult Literacy and Technology Plan* (Adult Literacy Resource Institute, 1977) describes the availability of one computer for each five adult literacy learners who are present at an agency at a given time as a "best case" ratio. On average, this figure would be reached for LBS agencies in Ontario if one computer were available for each ten learners registered in those agencies, since many learners attend the agency on a part-time basis. For

agencies in which many learners work off-site with tutors, there should be provision for the purchase of laptop computers and a secure check-out system.

Action:

Ontario will adopt the goal of one computer for each ten learners in the LBS Program.

2.2

Internet connections

The cost of connecting computers to the Internet, particularly the cost of telephone lines, has historically been a significant barrier for many LBS agencies. Often an LBS agency can afford only one telephone line for both business and learning purposes.

Action:

Resources will be made available to LBS delivery agencies for the cost of at least one Internet telephone line dedicated to learning purposes.

2.3

Training in basic computer skills

LBS agencies must provide instruction for learners in basic computer skills required for participation in computer-based learning. See Appendix A for a list of suggested basic computer skills. The list was synthesised from the Essential Skills project of Human Resources Development Canada and from the Massachusetts Technology Team report.

An important resource would be a CD-ROM that could assist learners at more basic levels to learn rudimentary computer skills and language in a gradual way, leading up to going on the Web and joining AlphaRoute. The CD-ROM approach would address the fears that many learners might have about computer technology in a non-threatening way. This resource could be used alone or co-ordinated with a group program in a literacy setting.

Action:

A proposal will be invited for the development of a CD-ROM that will prepare learners at more basic levels to begin using computers, the Internet, and AlphaRoute.

2.4

Electronic curriculum resources

Organisations in the Ontario literacy field—particularly AlphaPlus Centre, Ningwakwe Learning Press, Centre FORA, and many LBS agencies—have a long tradition of producing high-quality literacy learning materials used in this province, the nation, and abroad. If learners are to have enough locally relevant, hypertext-based curriculum materials, the above organisations will need to publish electronic resources, according to agreed-upon standards.

Action:

Curriculum materials in electronic formats for computer-based learning will be developed by AlphaPlus Centre, Ningwakwe Learning Press, and Centre FORA, in co-operation with LBS agencies in the four LBS delivery streams.

2.5

Strategic direction #3

Support literacy agencies and practitioners to use computer-based learning effectively

- Catalogue and share best practices in computer-based learning in literacy
- Develop online tools to support literacy instruction
- Support professional development for practitioners in effective computer-based instruction
- Build the capacity of agencies to develop effective technology plans
- Identify supports for maintaining hardware and software
- Define and support volunteers' new roles that emerge from the use of computers in literacy instruction

Best practices

A key part of supporting practitioners and agencies to effectively use computer-based learning is to catalogue and share best practices. The challenge for the practitioner is to learn how to become a good computer-based teacher and also to learn how to situate computer-based work in the context of literacy learning.

Cataloguing best practices will be useful in practitioner training, particularly if they are written as case studies describing realistic situations that involve learners and that are widely shared in the literacy field.

One of the main tools of this project will be ongoing, fully and actively moderated AlphaPlus discussions in all four streams, organised by AlphaPlus Centre, where practitioners across Ontario are encouraged to share their best teaching ideas. These discussions will give practitioners concrete ideas to try, and it will encourage leadership to emerge from the field.

Action:

Case studies on best computer-based learning practices will be collected and electronically published, and online discussions on best practices will be organised, by AlphaPlus Centre.

3.1

Online tools

Computers and the Internet can be valuable resources for literacy practitioners in preparing instructional materials. Several current projects supported by MTCU and NLS are developing tools to support literacy instruction using a learning outcomes approach.

The Simcoe County Literacy Network is developing an online, searchable database of learning outcomes demonstrations. The first demonstrations to be placed on the database will be the ones created by sectoral bodies and umbrella organisations in projects supported by MTCU and NLS. Using the database, LBS agencies will be able to locate and print out demonstrations in the theme areas and LBS levels that they need for particular learners.

The Peel-Halton-Dufferin Adult Learning Network is developing an online learning outcomes demonstrations builder that complements the work of the Simcoe County Literacy Network. This tool will allow LBS practitioners and learners to construct and print out their own demonstrations using an online, interactive template. Because the demonstrations will be in a standard file format, practitioners will be able to easily

share them online, and the demonstrations can be stored in the online database being developed by Simcoe County.

Finally, the Ottawa-Carleton Catholic District School Board is investigating the feasibility of creating an online learning activities builder and database. The learning activity builder and database would perform the same functions for learning activities as the tools being developed by Simcoe County Literacy Network and the Peel-Halton-Dufferin Adult Learning Network will for demonstrations. The work of creating a learning activities builder and database would build upon a project of the board which is currently in progress: developing a collection of learning activities keyed to common learning themes and to the five LBS levels.

All of the above tools are being developed in co-operation with AlphaPlus Centre. AlphaPlus Centre will host and co-ordinate the tools for use by LBS agencies across the province. There are plans to link these tools to the AlphaRoute distance learning environment in order to support distance delivery of the LBS Program.

Professional development

There is a real need to provide widely accessible, accelerated training for practitioners in computer-based learning in literacy. A recent paper suggests that it can take teachers up to five years to become proficient at using computers in instruction.

Even when teachers are not skeptical about the appropriateness of educational technology and are willing to learn, they can take as much as five or six years to become sufficiently comfortable with computers to be able to use them effectively in their classrooms. (Burnett, G. 1994. Technology as a Tool for Urban Classrooms. ERIC Digest Number 95, ED368809.)

When practitioners begin to use computers with adult literacy learners they go through a number of stages to become effective. They typically move from more traditional methods (drill and practice) to providing innovative and project-based collaborative learning. As well, there is a tendency for beginning teachers to use rote drill and practice methods with beginning learners and more collaborative, enquiry-based approaches with more advanced learners. As they gain more experience, instructors are able to see a wider range of learning opportunities that are available.

In order to deliver LBS services through computer-based learning, agencies will need to demonstrate that their instructors are qualified for this mode of delivery. Sectoral bodies in the Anglophone stream and umbrella organisations in the Deaf, Native, and Francophone streams are developing lists of core skills for computer-based learning in consultation with their member agencies.

At a minimum, the core skills will need to address the following areas:

- learning basic computer skills;

- understanding standard software applications (word processing, spreadsheet, database skills);
- gaining basic skills in the Windows and/or Macintosh environments;
- mastering Internet and e-mail skills;
- using a computer for literacy work; and
- integrating computer learning into current classroom practices.

MALTT has developed a more complete list of core skills. See Appendix B for a copy of this list.)

There are a number of reasons why technology training for literacy practitioners should be ongoing.

- Rapid advances in technology require constantly updated information.
- There is high turnover in the field of adult literacy.
- Time is required to become an effective computer-based learning teacher.

Action:

Training in computer-based learning will become an on-going topic for professional development as delivered by regional networks, sectoral bodies, and umbrella organisations—as supported by AlphaPlus Centre.

3.2

Delivery channels for training

It is desirable to provide a variety of delivery channels for practitioners to learn the new technology skills associated with computer-based learning. These channels include combinations of the following:

- face-to-face training;
- Web-based training;
- CD-ROM—or DVD—based training; and
- video-based training.

Face-to-face training

As part of its core-funded activity, AlphaPlus Centre currently has plans to provide training at Anglophone, Francophone, Deaf, and Native meetings as well as at regional and provincial literacy meetings, on using the AlphaPlus discussion system, gaining access to the AlphaPlus Centre resource library, and exploring new software applications.

Regional networks, sectoral bodies, and umbrella organisations will incorporate computer-based instruction learning opportunities as part of regional or provincial training events, conferences, and other meetings. Trainers will require the use of larger computer labs in order to conduct hands-on workshops on computer-based learning methodologies. Special partnerships need to be considered to make these types of facilities available.

Action:

Partnerships will be sought with community colleges and other organisations with computer labs that may be used for practitioner training on technology.

3.3

Web-based training

Web-based training will allow practitioners to learn at their own pace, at a distance, in collaboration with other practitioners, and in a cost-effective way. These courses should be designed and delivered taking into account models developed by organisations like Literacy Link Eastern Ontario and La Cité collégiale.

Action:

Project proposals will be invited for Web-based professional development courses from sectoral bodies and regional networks in the Anglophone stream and umbrella organisations in the other streams.

3.4

CD-ROM—or DVD—based training

A Compact Disk-Read Only Memory (CD-ROM) or a Digital Versatile Disk (DVD) can provide the kind of interactive, media-rich instruction that cannot yet be delivered over the Web.

Action:

A project proposal will be invited from AlphaPlus Centre to create a practitioner training CD-ROM or DVD on computer-based learning following, for example, the model of Algonquin College's Prior Learning Assessment CD-ROM.

3.5

Video-based training

Video-based training has proved highly successful in the implementation of the LBS learning outcomes. This approach will be explored for practitioner training in computer-based instruction.

Action:

Partnerships with organisations such as TVOntario will be formed in order to provide video-based training on computer-based learning.

3.6

Technology planning

There is broad consensus that effective utilisation of computers in adult education requires sound planning.

Planning provides a road map for the implementation of technology and can result in more efficient expenditure of limited resources... There is evidence that when educational goals are not decided upon before technology implementation, technology can become a drain on resources and add to the burden of teachers who are already trying to do too much.

(Piele, P.K. 1989. Cited in Hopey, C.E. and Harvey-Morgan, J. 1995b. Technology Planning Adult for Adult Literacy. Prentice Hall Guide No. PG95-02. Philadelphia: University of Pennsylvania, National Center on Adult Literacy).

Some Ontario literacy agencies have already begun carrying out technology planning and a great deal of development has occurred in other jurisdictions as well. Work is needed to research and evaluate existing technology plans and the implementation of these plans. In addition, some models will be developed in order to guide LBS agencies incorporating technology planning into their business plans. A variety of models are needed at the present time. In most literacy agencies, technology will

be used to augment and support existing teaching practices; these practices vary from agency to agency.

Action:

Key performance indicators will be developed for literacy and technology and LBS agencies will be supported as they develop technology plans.

3.7

Technical support

Literacy agency personnel need to acquire a minimum level of expertise to solve hardware and software problems. Staff need not become expert technicians, but they should have the skills to gauge the scope of a problem and seek appropriate solutions.

When purchasing hardware and standard software, agencies will look for support from local vendors and purchase extended support plans. They will be encouraged to seek support for their Internet connection from local Internet Service Providers (ISPs).

Frequently, vendor support is not sufficient to maintain the hardware and software environment required for computer-based learning. For example, there may be software conflicts between the audio players required by different Web-based learning environments. The vendor is not responsible for resolving this type of problem. Additional sources of support are required, such as that provided by AlphaPlus Centre.

AlphaPlus Centre has instituted a technical troubleshooter who is accessible through a help line. LBS agencies can call a 1-800 number and receive technical support. Agency staff may receive timely assistance and effective troubleshooting modeled specifically for them. AlphaPlus Centre's help line will particularly focus assistance on technologies that are shared across the LBS system, such as the AlphaPlus discussion system and distance education. AlphaPlus Centre will keep statistics on what kind of support is being requested in order to aid in future planning.

Action:

As part of its core activities, AlphaPlus Centre will provide appropriate technology support services in order to enable each LBS delivery agency to consolidate its technological base for computer-based delivery and its connection to the Internet.

3.8

New roles for volunteers

As computers continue to be introduced into literacy learning, the role of volunteer tutors will evolve from paper-based work to supporting computer-based learning. The practices of selection, orientation, and training of the new volunteers will need to respond to these changes.

The role of volunteers in computer-based learning will require technology skills, as well as skills in instructing in the new medium. Volunteer tutors need to become aware of their agency's technology plans and of the new possibilities open to them.

Volunteer tutors, for example, may play an important role in the AlphaRoute distance learning environment, and will need training to do so. Training on how to use computers in literacy learning will have to be integrated into existing volunteer orientation training.

The advice of private sector technology companies could be highly valuable in determining the best ways to recruit and train volunteers who have technical skills. In addition, one or more firms may advertise the need for volunteers among their workforces.

Action:

A strategy will be developed to recruit, train, and co-ordinate volunteer tutors with the technical skills required to support practitioners and learners in computer-based learning, including distance delivery through AlphaRoute. The strategy will be developed by Community Literacy Ontario and Laubach Literacy Ontario, in co-operation with the private sector.

3.9

Strategic direction #4

Provide LBS services to more Ontario adults, in new and effective ways, through computer-based learning

Through computer-based learning, provide new or enhanced services to:

- deaf adults
- adults who have challenges or disabilities
- remote areas where traditional delivery modes are not feasible
- adults whose schedules do not permit them to participate in regular LBS programming
- Ontario Works (OW) Participants

Services to deaf adults

The Deaf community is familiar with advanced communication technologies. In many ways, Deaf culture has shown itself to be more experienced and more open to using technology to facilitate learning and communication than hearing society. For many years, the Deaf community has used:

- TTY devices to facilitate communication over telephone lines;
- closed captioning to understand television;
- e-mail to facilitate Internet communication; and
- AlphaPlus Centre's discussion system and the World Wide Web to assist with communication and literacy learning.

While the speed of Internet transmission remains an issue, real-time, interactive video conferencing, and video e-mail have become realities and now provide significant new learning opportunities. Sign language conveyed through multimedia adds a dynamic element to the literacy learning process for Deaf people. Video-conferencing and video e-mail will result in:

- increased stimulation and motivation;
- increased opportunities for communication between learners and practitioners; and
- cost-effective practitioner training initiatives.

Other ways in which computer-based learning may help the Deaf community should be explored. For example, Phase Three of AlphaRoute will examine and create online learning experiences to meet the special needs of the Deaf community.

Action:

A Deaf Technology Team will be set up in order to focus on the ways in which technology may help Deaf learners to meet their LBS goals.

4.1**Challenges and disabilities**

There are 5 different areas of disability that technology may assist:

1. sensory;
2. motor;
3. cognitive (developmental delay, brain injury);
4. psychiatric; and
5. learning.

Exciting advances are being made in the development of new adaptive and assistive technology devices to help adults with disabilities to learn.

- People who have limited use of their hands because of a physical disability are using voice-input software instead of typing.
- People with reduced vision use screen enlargement software which allows users to enlarge the screen. It also allows users to view the screen in reversed colours (white text on a black background) and with an enlarged mouse pointer.
- Learners with learning disabilities are now using a scanner and character recognition software to turn their computer into a reading machine. The scanner takes a picture of a page, the software turns it into text, and then the computer reads the text. With some software, the user controls the speed of the reading and what units are read back—words, phrases, or sentences.
- Voice-activated dictionaries are now available. When a learner is reading and has trouble understanding a particular word, it may be typed into the software program and the computer reads the word out loud. Also, when learners have trouble spelling a word, they may type the word into the dictionary software program and if the word is spelled incorrectly, a list of possible correct words appear. When the user clicks on any of the words, and they are read out loud..
- Many of these same devices have application with all literacy learners, who can utilise them for enhanced literacy learning.

The Ontario literacy field must keep abreast of these developments and provide opportunities for adults with disabilities to have their learning assisted by technology where appropriate. Literacy practitioners need opportunities for hands-on demonstrations of new adaptive and assistive devices.

Action:

Project proposals will be invited from LBS agencies with expertise in the area for demonstration projects for adaptive and assistive devices to enhance literacy learning.

4.2

Delivery in remote areas

The issue of access to Internet-based, distance delivery is crucial for geographical areas currently underserved by the LBS Program, particularly rural and northern areas. Internet connections are still inconsistent and rather slow in some areas of Ontario. The strategy for computer-based learning in literacy must work for urban and rural agencies, as well for southern and northern Ontario.

In some areas of Ontario, ISPs provide uneven service and even go out of business frequently. Ten years ago, literacy agencies in remote areas connected to their urban peers on the AlphaPlus Centre discussion system through a LBS-funded telephone line. When the Web became commonplace, LBS agencies were asked to contract with local ISPs, but there is now evidence that the slow connection speeds and poor service constitute a serious barrier to the participation of many literacy agencies, practitioners, and learners in online activities.

The Francophone literacy coalition, *La Coalition francophone pour l'alphabétisation et la formation de base en Ontario*, has identified Internet connections as a particular problem in areas of northern Ontario.

AlphaPlus Centre is now investigating providing an extra server in northern Ontario in much the same way that British Columbia's literacy discussion system has placed a dedicated server in northern B.C. Other alternatives may be examined, such as contracting with a large ISP and bringing agencies to it by a 1-800 number or exploring satellite service.

Action:

Alternative Internet connections for remote regions of Ontario will be investigated by AlphaPlus Centre.

4.3

Accommodating schedules

Computer-based learning offers new options for access to and scheduling of LBS Program services. Many adults work irregular shifts or have child care responsibilities that may inhibit their attendance at LBS delivery agencies. Distance learning environments, such as AlphaRoute, offer unprecedented opportunities for adults to study wherever and whenever they are able.

The new computer-based learning opportunities will open LBS services to a large pool of adults who previously had inadequate access to them.

Ontario Works

Most LBS agencies already serve participants in Ontario Works (OW), the provincial program that administers temporary financial assistance for qualified applicants. However, many more OW participants will need LBS services as part of the new government initiative to provide literacy and basic skills services to all OW participants who require them in order to obtain and hold employment. Computer-based learning offers an important avenue for making LBS services available to this expanding population of literacy learners. There is a need to explore how computer-based learning may meet this growing need.

Action:

Innovative means of adapting computer-based learning to better meet the needs of Ontario Works participants will be developed.

4.4

Strategic Direction #5

Involve learners in a new culture of connectivity within the adult literacy field

Enhance the Internet links among learners, government, field support and service organisations, literacy delivery agencies, and practitioners.

Learners need new skills and new ways of acquiring and practicing those skills if they are to be effective, participating workers and citizens. Organisations involved in literacy create a valuable arena for learners to exercise their growing skills. These agencies can do so by becoming active participants—alongside learners—in a culture of connectivity based on computer technology. This culture includes the connectivity provided by special literacy-based Web pages, e-mail, and computer conferencing systems.

The development of a culture of connectivity would be accelerated by a large and tangible commitment by an important stakeholder such as MTCU. The LBS Section maintains a Web site and posts messages on the AlphaCom discussion system. These activities could be enhanced and extended, including the development of a means for the online transfer of LBS program statistics.

Action:

The Web-based information and communication capacities of the Literacy and Basic Skills (LBS) Section will be enhanced as an example for the field.

5.1

For learners, this culture of connectivity involves opportunities to engage in reading and writing activities related to their roles in delivery agencies and as learner representatives for networking organisations. Through accessing and sending messages and information as well as engaging in joint decision-making, planning, and goal-setting with others in the literacy field, learners will also be able to exercise basic skills, such as self-management and self-direction.

The skills learners develop will enable them to move more easily into the next phase of their working and learning lives.

To support the new, enhanced roles of learners, organisations in the literacy field make use of the growing computer-based communication links between government, literacy agencies, and learners. Learners must also be given the support and training they need to participate in online communication in the literacy field in Ontario.

Action:

Literacy organisations will research the need for, and develop models of, training and support for learners to be full participants in the online literacy community in Ontario.

5.2

Strategic direction #6

Promote new partnerships of LBS delivery agencies with government, non-profit agencies, and the private sector to extend the technology leadership role of the adult literacy field in Ontario

- Identify key technology stakeholders in literacy in Ontario
- Host two regional Partnerships for Literacy and Technology meetings
- Invite partnerships with the private sector
- Support the Canadian electronic infrastructure.

Partnerships make new activities possible, and make it possible to do them in a more cost-effective way. New and inclusive partnerships are required to fund and support the technological base for computer-based learning in literacy in Ontario. No single partner could provide all of the resources and creativity needed if computer-based learning were to reach its exciting potential as a full medium of literacy learning for adults.

Many organisations are currently rethinking their roles and re-positioning themselves to take advantage of the new opportunities for strategic partnerships on behalf of technology in literacy.

The strategy provides guidance for partnering among provincial and national agencies that have distance learning in their mandate, such as:

- National Literacy Secretariat (NLS);
- Contact North; and
- National Adult Literacy Database (NALD).

1. National Literacy Secretariat

Historically, Ontario's partnership with the National Literacy Secretariat (NLS), a part of Human Resources Development Canada, has provided significant support for Ontario's activities in computer-based learning in literacy. The NLS has been a funding partner of services such as AlphaPlus Centre and AlphaRoute. To make the most efficient use of limited resources, Ontario must try to avoid duplication. The NLS has literacy partnerships in all provinces and territories. It is increasingly important for Ontario to know what has been funded or is being planned in other provinces in the area of computer-based learning in order to make informed funding decisions.

2. Contact North

Contact North is an independent, non-profit organisation funded by MTCU. Contact North supports audio and video-conferencing from its 39 staffed and 106 unstaffed sites. Typical staffed locations include a site co-ordinator and from two to six local teleconference co-ordinators.

Contact North is interested in adding to its services support for computer-based delivery, including distance learning and conferencing. The vision for the Contact North sites is to become multi-purpose learning centres, supporting various distance-delivery services. Contact North is now negotiating a partnership with the Independent Learning Centre of MTCU to support direct delivery. Other partners could include the Workplace Preparation Branch and the Workplace Support Branch.

With support from MTCU and NLS, Contact North has partnered with AlphaPlus Centre and two LBS delivery agencies to operate and research two first sites of distance delivery through AlphaRoute.

3. National Adult Literacy Database

The National Adult Literacy Database Inc. (NALD) is a federally incorporated, non-profit service located in Fredericton, New Brunswick. NALD has been a very important partner in Ontario through its support to many literacy agencies and organisations, particularly in the areas of Web page creation and hosting, information sharing, and document posting. AlphaPlus Centre and NALD serve many of the same agencies so a partnership that prevents duplication is needed.

AlphaPlus Centre continues to explore and develop partnerships with NALD on the many areas where their services complement each other, including computer-based learning.

In addition to the three organisations discussed above, two other important organisations have mandates that include adult education. They are TVOntario, funded by MTCU, and the Independent Learning Centre (ILC) of the Ministry of Education (EDU). Discussions between MTCU and the two organisations could focus on possible collaborations in support of adult literacy in Ontario.

Innovative partnerships between LBS delivery agencies and other literacy organisations with government, foundations, and private sector partners have resulted in hardware and software donations to LBS delivery agencies, funding for technology demonstration projects, and similar support for computer-based learning in literacy. Positive steps should be taken to encourage these partnerships.

These partnerships need to be considered on a regional basis, since the challenges and opportunities of computer-based learning vary in important ways between southern and northern Ontario. For example, geographic isolation and distance is much more a factor in northern Ontario, requiring innovative solutions for activities such as distance learning.

Action:

Two regional Partnerships for Technology and Literacy meetings (one in northern Ontario and one in southern Ontario) will be held to encourage innovative collaborations among organisations of all types.

6.1

Many technology projects conducted in Ontario might well attract the interest and possible co-sponsorship of private sector partners. A number of literacy organisations in Canada have developed partnerships, such as the support for family literacy by Honda Canada and the support for Frontier College by Chapters, the bookseller. Support for computer-based learning in literacy might well be found among technology-related businesses.

Action:

Private sector partnerships will be considered for all key technology initiatives.

6.2

Ontario has much to offer nationally and internationally as a result of its experience in using technology in literacy. There are several ways that Ontario can better share this experience and benefit from the experiences of other jurisdictions.

Ontario has participated in several joint initiatives related to national technology infrastructure. However, more involvement on the part of the government of Ontario, service organisations such as AlphaPlus Centre, and umbrella organisations would open new windows to computer-based learning practice.

Action:

Ontario will play a vital provincial role in the Canadian electronic literacy infrastructure through means such as sharing its expertise on computer conferencing and distance learning and co-operating in joint initiatives such as the National Literacy Resource Sharing Project.

6.3

5. Conclusion

Technology is transforming all aspects of our society: the Internet is quickly becoming the new storefront, marketplace, and information source. Most jobs now depend in one way or another on digital technology.

Reports such as the *Road Map to Prosperity* call upon the institutions responsible for education and training for adults to act now to incorporate the new technologies. In doing so, these institutions will be able to help lay the basis for lifelong learning and economic independence for learners, and contribute to a more prosperous Ontario.

We have seen how the *Tools for a New Beginning* strategy responds to this challenge with a new, inclusive vision for the introduction and use of computers in adult literacy learning in Ontario. The strategy provides support for incorporating the new technologies into the Literacy and Basic Skills (LBS) Program in effective and cost-efficient ways.

Ontario has introduced exciting new opportunities for this new mode of delivery of literacy services. The rich combination of text, images, animation, and sound as well as the possibility of interactivity, even over the Internet, can lead to accelerated learning. As a result of computer-based learning, more Ontario adults than ever before will be able to take part in the LBS Program, and in new and highly motivating ways.

Through computer-based learning, the LBS Program can provide adults with the literacy skills needed to use computers. Other programs and services in the emerging, comprehensive, adult education and training system will build upon the base of literacy and basic skills provided by the LBS Program to provide those adults who are bound for employment with specific employment skills.

Much has been done to lay the foundation for computer-based learning in literacy in Ontario, including the creation of agencies such as AlphaPlus Centre, the distribution of computers to all LBS agencies for the use of learners, and more than a decade of experience with computer conferencing. However, in many ways, computer-based learning is still at a take-off phase in Ontario because new technological possibilities are arriving at an accelerating pace. The next three years—a very long time in the era of technology—will be a critical period in determining the extent to which the exciting potential of computer delivery of literacy is realised in Ontario.

While computer-based technologies are expanding opportunities for independent literacy learning, solid supports are required if LBS agencies, practitioners, and learners are to make effective use of them. Although LBS agencies need to acquire up-to-date hardware and software, the forward movement of computer-based learning can also stall for lack of such seemingly mundane considerations as a secure Internet connection, a dedicated telephone line for the Internet, or ready assistance with technical problems.

Agencies and practitioners need a variety of types of information and training to provide computer-based learning. Practitioners need training in exploiting the opportunities for new, creative kinds of learning through computers, directed to the goals of learners for fulfilling lives and good jobs. Agencies require information on technology planning and on guidelines for choosing effective software.

Continuing, long-term investments will be needed to provide hardware, software, support, and training for LBS agencies to serve learners with leading-edge technology. Delivery agencies must develop comprehensive technology plans to ensure that they can incorporate computer technologies in cost-effective ways. MTCU has a critical role to play in providing resources for computer-based learning in literacy. As well, many other champions of adult literacy from the public and private spheres are needed—united in strategic partnerships—to build and maintain the technology capacity of the Ontario adult literacy field.

Another equally important role for MTCU is in providing leadership and expertise for the development of computer-based learning in literacy, in alliance with the entire literacy field, its stakeholders, and some new partners. It is in this light that the *Tools for a New Beginning* strategy is offered as a comprehensive plan for the future in ensuring that Ontario maintains its leading position in technology in literacy and continues to provide adults with the skills they will need in the 21st century.

Appendix A

Suggested basic skills for learners to participate in computer-based learning

The following tables have been adapted from the Essential Skills project of Human Resources Development Canada and the work of the Massachusetts Adult Literacy Technology Team.

Basic computer operation skills	
The learner will be able to:	
Turn on / off computer, monitor, printer	Know the meaning of the hourglass
Name basic computer system parts	Open a desktop (icon) software program by double clicking
Use a keyboard	Use a software program and navigate menus
Select appropriate software for a task	Recognise floppy and CD-ROM disks
Open a program (like a word processor) using Start menu	Use Help screens in software programs
Minimise/maximise open programs	Successfully exit a program
Understand the difference between a program and a document	Use typing tutor to increase typing speed and accuracy
Use a mouse	
Basic operating system skills	
The learner will be able to:	
Create folder for personal work	Minimise / maximise open programs
Use Start menu	Change drives, from hard to floppy to CD-ROM drive
Use Find command	Be able to put files in the Recycle Bin / Trash

Basic e-mail skills**The learner will be able to:**

Activate a personal e-mail account with log-in, name, password	Log-in to check personal e-mail
Write and send a message to a friend, co-worker, pen pal, or tutor	Send e-mail to more than one person
Receive and read new e-mail	Respond to e-mail received
Exit e-mail program	Maintain e-mail account by saving and deleting messages

Basic Internet skills**The learner will be able to:**

Dial-in or log-on to the Internet	Open a Browser
Recognise a URL (Web address)	Use Netscape Bookmarks or Internet Explorer Favorites to get desired information
Type a URL in the Internet Explorer Address or Netscape Location Box	Use Back and Forward and Reload commands
Locate and click on links on a Web page, including invisible ones	Use a search index like AltaVista or Yahoo to do a simple search for information
Understanding scrolling	Print a Web page

Basic word processing skills**The learner will be able to:**

Create a new document and save it in an appropriate folder	Open/close a document
Use drop down menus	Use undo/redo functions
Move insertion point using mouse/arrow keys	Correct errors using backspace/delete keys
Cut, copy and paste	Change font/font size/colour
Format text (bold, italicise, underline, justify)	Set margins
Use spell check	Use Find and Replace functions
Use Save as function	Print a document

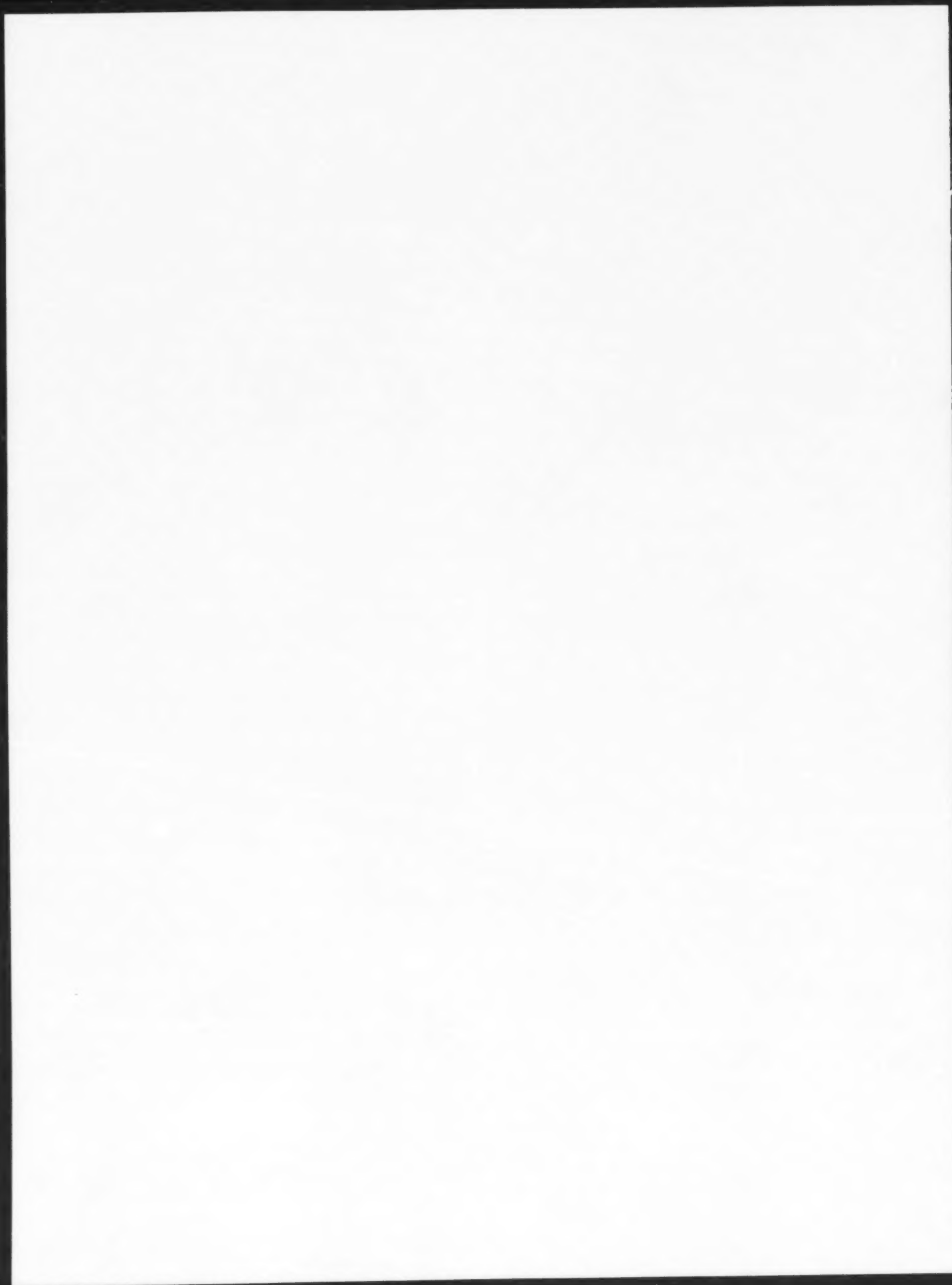
Appendix B

ABE teacher competencies for technology (1999)

This document is the fourth draft of the proposed ABE Teacher Competencies for the Massachusetts State ABE Technology Plan.

There are four levels of competencies for most of the categories: **tin**, **bronze**, **silver** and **gold**.

- **Tin** is a recent (1998) addition; it was added after several people looked at the bronze levels and got nervous. Tin is perhaps a better reflection of where many people stand in various technology areas. Nonetheless, we encourage people to aspire to the bronze level. Tin levels of skill are not part of the stated goals for the technology plan;
- **Bronze** indicates the basic level of competency necessary to get basic use of the system. Every competent user should have at least bronze level in the areas being used.;
- **Silver** indicates a more advanced level of comfort and understanding of the system; users with silver level should be able to tutor users up to bronze, and should be able to troubleshoot any questions that might arise out of bronze-level usage. A silver-level user, in other words, should be viewed as a potential mentor for other users;
- **Gold** indicates a "wizard" in the respective area—a user who is able to manage most, if not all, levels of the system, put out fires, run seminars, teach large groups, and replace parts of the system when necessary.



Hardware

	TIN	BRONZE	SILVER	GOLD
Storage of information	Know that documents must be saved to disk in order to be permanent and that losing power to a computer will lose any unsaved data	Know to save files before quitting; understand difference between RAM and magnetic storage media; know how to back up data onto diskettes; understand good backup philosophy	Know how to use backup software to make large-scale archives on large-capacity removable media (tape backups, removable hard disks, writeable CDs, etc.); know how to use compression software (PKZIP, Stuffit, GZIP) as appropriate	Understand capacities of different media (diskettes, hard disks, optical disks, removable hard disks [Syquest, Jaz, Zip, etc.], CD-ROM, tape backups); know how to choose appropriate media; how to repair damaged media; use tools to resurrect "crashed" disks and recover information
Differences between platforms	Know that there are different platforms (Mac, Windows 3.x, Windows 95/98 and others) that are still mostly incompatible and that decisions sometimes have to be made about which platform to use	Know that applications are generally platform-dependent, but data is "typed" (text, binary data, wp, image, voice, video) and is generally platform-independent but application-type-dependent	Can transfer data between platforms; know strengths and weaknesses of each and choose when appropriate	Can maintain simultaneous, parallel environments with machines of different platforms (particularly Macintosh, Windows 3.x, Windows 95/98)
Machine usage	Can sit down at a powered-up machine with prestarted application and enter or manipulate basic data (type, or play a game using mouse)	Can turn on and off safely; launch and quit applications; type, use mouse and interface (windows, menus)	Can connect/disconnect basic components (mouse, keyboard, monitor, printer); perform basic maintenance (clean mouse)	Can install cards, drivers, perform intermediate maintenance/troubleshooting (examine cards for secure connections, test components and peripherals for functionality)
Service	(N/A)	Can verify computer, monitor and components plugged in and powered on	Can check to verify components (printer, scanner, speakers) properly connected	Can test drives, media, video, sound; run diagnostic utilities to get additional information

Application software

	TIN	BRONZE	SILVER	GOLD
Word processing	Can type into an open document, delete characters, move cursor with mouse and arrow keys	Can type text, make basic corrections to text, use spell checker, save files; print files	Can format text; save in different file formats; import graphics into document—capable of using most formatting features of word processing program	Can automate repetitive tasks (use macros), transfer data of different types between applications, import other data types (spreadsheet data into WP document); can understand and teach document design
Spreadsheets	Can enter values into an open spreadsheet, understand 2-D nature of data	Can enter data into cells; use simple formulas (@sum)	Can use basic formulas, basic arithmetic routines; set up spreadsheets for appropriate tasks	Can use macros, import/export data; can understand and teach spreadsheet design
Graphics	Can use basic paint tools in an open graphics program	Can use paint programs, basic tools; save files; print files	Can use advanced paint tools (e.g. gradients), use basic drawing package and understand difference between bitmaps and objects, export graphics to WP and other applications	Can combine paint and drawing, import and export to different file formats (PICT, JPEG, GIF, TIFF, etc) dependent on destination and need (printing, Web pages, b&w / colour)
Database	Can enter data in an open database form or screen	Can enter data, understand difference between field-record-database	Can search, sort, use wildcards; can set up a flat-file database	Can import/export to/from text, tab- or other-delimited formats; translate loose, unformatted text into importable data; Can design, debug, and implement a relational database
Desktop publishing (DTP)	Can type in open document (that is, as word processing)	Can type letter, use basic formatting, print/save	Can create newsletter with advanced formatting (columns), mix text and graphics	Can create HTML documents (either manually or via editor), integrate sound/video/other data types in document
Tools/utilities	(N/A)	(N/A)	Can run basic diagnostic applications (MSD, Norton Utilities, etc.), use anti-virus software	Can perform advanced diagnostic/repair functions, repair damaged files and disks, back up and recover damaged disks, etc
Tutorial/simulation	Can do			

Credits

Several members of the Massachusetts Adult Literacy Technology Team (MALTT) contributed to the content of these competencies in 1997-98, but the chief designer, compiler, coder, and wizard behind the original Web version was Steve Linberg, formerly of the Holyoke Adult Learning Opportunities (HALO) Center, presently of the National Center on Adult Literacy (NCAL).

Please send comments, questions and additions to either: David Rosen (SABES Boston/ALRI) or Kenny Tamarkin (SABES Northeast).

<http://www.sabes.org/>